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10/705,205

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EXAMINER

SAMUEL, DEWANDA A

ART UNIT	PAPER NUMBER
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2616

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/705,205

Applicant(s)

CHOI ET AL.

Examiner

DeWanda Samuel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objection

1. **Claims 29-34** are objected to because of the following informalities: "The apparatus" is not referring back to independent claim 28 "A mobile station".
Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. **Claims 1 and 6** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "scanning channels by using the channel information". A more clear statement is needed.
4. **Claims 35, 48, and 53** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation "scan for a new access point using the channel information". A more clear statement is needed.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 51 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. "A computer readable medium containing a data structure for storing channel information on access points in an extended service set"

The claimed invention does not fall within at least one of the four categories of patent eligible subject matter recited in 35 U.S.C 101 (process, machine, manufacture, or composition of matter).

The claimed invention is directed to a judicial exception to 35 U.S.C. 101 (i.e., an abstract idea, natural phenomenon, or law of nature) and is not directed to a practical application of such judicial exception (e.g., because the claim does not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claim 7 and 42** are rejected under 35 U.S.C. 102(e) as being anticipated by Rom (US Patent 6,360,264).

With regard to claim 7, Rom discloses *A handoff method for an access point of a mobile station in a wireless local area network, the method comprising: collecting channel information on access points in an extended service set in response to receiving a handoff alert message, from the mobile station; and outputting a response message corresponding to the handoff alert message to the mobile station, the response message including the channel information.* Rom discloses selecting a new access point, the node ("mobile station") communicates an instruction to the current access point instructing it to relay a message to the selected access point, requesting that the selected access point accept the handoff of the node ("outputting a handoff alert message to the previous access point", column 5 line 18-22)...the selected access point responds automatically to the nodes request by transferring a packet containing its operating parameters to the node through the old access. The operating parameters typically include, but are not limited to, the frequency of the channel on which the selected access point communicates with nodes (column 5 line 28-32).

With regard to claim 42, Rom discloses having a *computer readable medium encoded with operating instructions for implementing a handoff method for an access point of a mobile station in a wireless local area network, performed by a computer,*

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the method comprising: collecting channel information on access points in an extended service set in response to receiving a handoff alert message from the mobile station; and outputting a response message corresponding to the handoff alert message to the mobile station, the response message including the channel information. Rom discloses selecting a new access point, the node communicates an instruction to the current access point instructing it to relay a message to the selected access point, requesting that the selected access point accept the handoff of the node ("outputting a handoff alert message to the previous access point", column 5 line 18-22)...the selected access point responds automatically to the nodes request by transferring a packet containing its operating parameters to the node through the old access. The operating parameters typically include, but are not limited to, the frequency of the channel on which the selected access point communicates with nodes (column 5 line 28-32).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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9. Claims 1,2,5,11-16,18, 20-26,28,29,33,34,40,43-46,48-50,52, and 53 are rejected under 35 U.S.C. 102(e) as being anticipated by Lefkowitz (US Patent 6,990,343).

With regard to claim 1, Lefkowitz discloses having a *handoff method for a mobile station in a wireless local area network*; Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52) *the method comprising: receiving channel information on access points in an extended service set from a present access point of the mobile station*; Lefkowitz discloses having a STA 205 that performs a scan for signals from other WAP (wireless access points) of sufficient strength, with the STA 205 normally choosing the WAP with the greatest strength (column 6 line 24-26)...the ESS 105 in fig. 1 of the wireless communication network 100 contains at least three other WAPs (wireless access points) 120, 130, and 140 with their own corresponding effective coverage areas 122, 132, and 142 (column 5 line 17-20). *and scanning channels by using the channel information to select a new access point of the mobile station.* Lefkowitz discloses having a STA 205 that performs a scan for signals from other WAP (wireless access points) of sufficient strength, with the STA 205 normally choosing the WAP with the greatest strength (column 6 line 24-26).

With regard to claim 2, Lefkowitz teaches the method recited in claim 1. *Wherein the channel information corresponding to each access point of the access points in the extended service set comprises an address of the access point,*

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information on a channel used by the access point, and information on one or more access points adjacent to the access point. Lefkowitz discloses having a STA 205 that performs a scan for signals ("information on a channel" used by the access point") from other WAP (wireless access points) of sufficient strength, with the STA 205 normally choosing the WAP with the greatest strength, for example, WAP#2 215 ("access point address" column 6 line 24-26). Lefkowitz further discloses the ESS 105 in fig. 1 of the wireless communication network 100 contains at least three other WAPs ... (wireless access points, column 5 line 17-20)." In addition, Lefkowitz discloses that a additional information can be transferred between STA 205 and WAP#1 210 and WAP#2 215 such as authentication information and other security information (column 6 line 51-55).

With regard to claim 5, Lefkowitz discloses having a *handoff method for a mobile station in a wireless local area network*, Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52) *the method comprising: selecting a new access point;* Lefkowitz discloses having a STA 205 that performs a scan for signals from other WAP (wireless access points) of sufficient strength, with the STA 205 normally choosing the WAP with the greatest strength, for example WAP#2 215 ("selecting new access poin", column 6 line 24-26). *outputting a reassociation message to the new access point;* Lefkowitz discloses after finding WAP#2 215, the STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to WAP#2 215 (column 6 line 27-29).

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and receiving a reassociation response message from the new access point in response to a temporary connection being established between the new access point and a previous access point of the mobile station. Lefkowitz further discloses the WAP#2 215 responds with a "REASSOCIATE-RESPONSE" packet 245(column 6 line 34-35)...after the STA 205 sent the REASSOCIATE-REQUEST" packet 240 it establish a connection between WAP#2 215 (column 6 line 39-50) the connection may be temporary depending on the reassociate - response from WAP#2 215.

With regard to claim 11, Lefkowitz discloses a *handoff method for an access point of a mobile station in a wireless local area network*; Lefkowitz discloses having a fast handoff method within a wireless communications network 100 (fig.1 and column 11 line 52).

the method comprising: establishing a temporary connection with a previous access point of the mobile station in response to receiving a reassociation message; Lefkowitz discloses that STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the WAP#2 215... the "REASSOCIATE-REQUEST" packet 240 is a specifically addressed to WAP#2 215 that effectively request that WAP #2 215 allow the STA 205 to establish a communication link with it (column 6 line 27-40). It is inferred that the connection that STA 205 currently has is temporary connection before a handoff to a WAP with sufficient strength.

outputting a reassociation response message corresponding to the reassociation message to the mobile station in response to establishing the temporary connection;

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Lefowitz discloses the WAP#2 responds with a "REASSOCIATE-REQUEST" packet 245 that provides an answer to the "REASSOCIATE-REQUEST" packet 240 (column 6 line 34-36).

establishing an optimum connection with the mobile station; Lefowitz discloses that WAP #2 215 allow the STA 205 to establish a communication link ("optimum connection") with it (column 6 line 27-40).

and terminating the temporary connection with the previous access point in response to establishing the optimum connection. Lefowitz discloses that STA 205 transmit a "DIASSOCIATE" packet 255 to the WAP#1 210. The "DIASSOCIATE" packet 255 completely severs any remaining connection the STA 205 had remaining with the WAP#1 210 (column 6 line 42-46).

With regard to claim 12, Lefkowitz teaches the method recited in claim 11.
further comprising buffering data received from the previous access point through the temporary connection. Lefkowitz discloses that WAP #2 215 allow the STA 205 to establish a communication link with it and that WAP#2 215 will distribute context information to the DS (distribution system) for the STA 205 (column 6 line 27-40). It is inferred that the DS (distribution system) will route data according to the new context information for STA 205.

With regard to claim 13, Lefkowitz teaches the method recited in claim 12.

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further comprising stopping the buffering of the data in response to the reassociation response message being sent to the mobile station. Lefkowitz discloses upon the receipt of the "REASSOCIATE-REQUEST" packet 245 from WAP#2 215 the STA 205 returns and ACKNOWLEDMENT" packet 250. At the same time the STA 205 transmit a "DIASSOCIATE" packet 255 to the WAP#1 210. The "DIASSOCIATE" packet 255 completely severs any remaining connection the STA 205 had remaining with the WAP#1 210 (column 6 line 42-46). It is inferred that packets destined for STA 205 connected to WAP #1 210 will be redirected to the new WAP#2 215.

With regard to claim 14, Lefkowitz teaches the method recited in claim 11.

Wherein the establishing of the temporary connection comprises: outputting a temporary connection request message to the previous access point; Lefkowitz discloses to begin handoff, the STA 205 must initiate the termination of its existing communication link with the first WAP#1 210 by sending a "ASSOCIATE-REQUEST" packet 220 to WAP#1 ("temporary connection request message", column 5 line 52-67). *and receiving a temporary connection response message from the previous access point.* Lefkowitz discloses having a "ASSOCIATE-RESPONSE" packet 220 sent by WAP#1 (column 5 line 62-63).

With regard to claim 15, Lefkowitz teaches the method recited in claim 11.

Wherein the terminating of the temporary connection comprises: outputting a temporary connection termination request message to the previous access point; Lefkowitz

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discloses the STA 205 transmit a "ASSOCIATE-REQUEST" packet 220 to WAP#1 210 to initiate the termination of the existing communication link (column 5 line 51-55).

and receiving a temporary connection termination response message from the previous access point. Lefkowitz further discloses STA 205 receiving a "ASSOCIATE-RESPONSE" from WAP#1 210 (column 5 line 61-65).

With regard to claim 16, Lefkowitz discloses having a *handoff method for a mobile station in a wireless local area network, ;* Lefkowitz discloses having a fast handoff method within a wireless communications network 100 (fig.1 and column 11 line 52).

the method comprising: selecting a new access point by scanning channels according to channel information received from a present access point; Lefkowitz discloses having a the WAP#1 beginning to look for a new WAP (wireless access point) and STA 205 may scan for signals from other WAPs (wireless access points) of sufficient strength, STA 205 normally choosing the WAP with the greatest signal strength (column 6 line 22-26).

and reassociating with the new access point in response to a temporary connection being established between the new access point and the present access point. Lefkowitz discloses after finding WAP#2 215, the STA 205 transmit a "REASSOCIATE_REQUEST" packet 240 to the WAP#2 215 (column 6 line 27-29). Lefkowitz discloses to begin handoff, the STA 205 must initiate the termination of its existing communication link with the first WAP#1 210 by sending a "ASSOCIATE-

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REQUEST" packet 220 to WAP#1 ("temporary connection request message", column 5 line 52-67).

With regard to claim 18, in combination Lefkowitz and teaches the access point recited in claim 17. *Further comprising a distributed service unit which stores the channel information.* , Lefkowitz discloses having a wireless communication network 100 ("wireless local area network") with several wireless access points ("access points", column 4 line 34-36). However, Lefkowitz does not disclose having distributed service unit which stores the channel information. Rudolf et al. discloses access points obtain assistance data (i.e. neighbor list or neighbor information) using OAM, inter-access point signaling, scanning, commanding WTRUs to scan (page 2 paragraph 17 line 1-8)...also the access point has a processor that stores neighbor information in memory ("distributed service unit", page 2 paragraph 24 line 1-7). It is inferred that the access points is able gather channel information on neighboring access points and string this information in memory.

With regard to claim 20, in combination Lefkowitz teaches the access point recited in claim 17. *Further comprising: a reassociation message process unit which receives a reassociation message from the mobile station and outputs a response message corresponding to the reassociation message to the mobile station;* Lefkowitz discloses that STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the WAP#2 215... the "REASSOCIATE-REQUEST" packet 240 is a specifically addressed

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to WAP#2 215 that effectively request that WAP #2 215 allow the STA 205 to establish a communication link with it (column 6 line 27-40)...the WAP#2 215 responds with a "REASSOCIATE-RESPONSE" packet 245 to STA 205 (column 6 line 34-36). It is inferred that the WAP ("access point") has the capability to process "REASSOCIATE-REQUEST" packet 240 and respond by sending a "REASSOCIATE-RESPONSE" packet 245.

and a temporary connection/termination process unit which establishes a temporary connection with a previous access point of the mobile station using information included in the reassociation message and terminates the temporary connection in response to an optimum connection being established with the mobile station. Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 have the capability to process temporary connections and also terminate connections (column 5 line 52-67 and column 6 line 30-50).

With regard to claim 21, in combination Lefkowitz and teaches the access point recited in claim 20. *wherein the reassociation message process unit outputs the response message to the mobile station in response to the temporary connection being established.* the WAP#2 215 responds with a "REASSOCIATE-RESPONSE" packet 245 to STA 205 (column 6 line 34-36). It is inferred that the WAP ("access point") has the capability to process "REASSOCIATE-REQUEST" packet 240 and respond by sending a "REASSOCIATE-RESPONSE" packet 245.

With regard to claim 22, in combination Lefkowitz and teaches the access point recited in claim 20. *further comprising an optimum connection search unit which establishes the optimum connection with the mobile station.* Lefkowitz discloses that WAP#1 210 is able to detect low level signals on the outer limits of the effective coverage area as STA 205 approaches. It is inferred that the WAP have the ability to detect signals that are weak or strong.

With regard to claim 23, Lefkowitz discloses having an access point performing a handoff with respect to a mobile station in a wireless local area network, the access point comprising:

a reassociation message process unit which receives a reassociation message and outputs a response message corresponding to the reassociation message to the mobile station. Lefkowitz discloses that STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the WAP#2 215... the "REASSOCIATE-REQUEST" packet 240 is a specifically addressed to WAP#2 215 that effectively request that WAP #2 215 allow the STA 205 to establish a communication link with it (column 6 line 27-40)... the WAP#2 215 responds with a "REASSOCIATE-RESPONSE" packet 245 to STA 205 (column 6 line 34-36). It is inferred that the WAP ("access point") has the capability to process "REASSOCIATE-REQUEST" packet 240 and respond by sending a "REASSOCIATE-RESPONSE" packet 245.

and a temporary connection/termination process unit which establishes a temporary connection with a previous access point of the mobile station using information included

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in the reassociation message. Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 ("wireless access points") have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50).

With regard to claim 24, Lefkowitz teaches the access point recited in claim 23. *further comprising an optimum connection search unit which establishes an optimum connection with the mobile station.* Lefkowitz discloses that WAP#1 210 is able to detect low level signals on the outer limits of the effective coverage area as STA 205 approaches. It is inferred that the WAP have the ability to detect signals that are weak or strong.

With regard to claim 25, Lefkowitz teaches the access point recited in claim 23. *Wherein the temporary connection/termination process unit terminates the temporary connection in response to an optimum connection being established with the mobile station.* Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50).

With regard to claim 26, Lefkowitz teaches the access point recited in claim 23. *Wherein the access point buffers data received from the previous access point through the temporary connection.* Lefkowitz discloses that WAP#2 215 allowed STA 205 to

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establish communication link with it , then the WAP#2 215 would notify the DS (distributed system) of the new context information for STA 205 (column 6 line 30-34)... the context may contain network addresses and other network configuration information about the STA 205, information that is critical in getting packets to and from the STA 205 (column 5 line 58-61). It is inferred that the temporary communication link between WAP#2 215 and STA 205 will seamlessly allow packets to continue to be received by STA 205 until a complete disconnection from the original WAP.

With regard to claim 28, Lefkowitz discloses having a *mobile station for use in a wireless local area network*, Lefkowitz discloses having a wireless communication network 100 in fig. 1 with STAs ('mobile stations').
comprising: a handoff alert message process unit which receives channel information on access points an extended service sent from a present access point; Lefkowitz discloses having a WAP#1 210 transmitting a message ("handoff alert message") to the STA 205 ("mobile station") to let it know that it is starting to move out of the effective coverage area of the WAP#1 210 and that it should start to look for an alternate wireless access point (column 5 line 38-45). It is inferred that STA 205 processes message from the WAP#1 210 that let them know that the signal level is getting weaker and that it time to search for a stronger signal generated by another access point.
and a scanning unit which scans for a new access point by using the channel information .Lefkowitz discloses that STA 205 may perform a scan for signals from

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other WAPs (wireless access points). It is inferred the STA 205 have the means to scan the channel for signals.

With regard to claim 29, Lefkowitz teaches the mobile station recited in claim 28. *further comprising an access point selection unit which selects an access point with a strongest signal as the new access point according to a scanning result of the scanning unit.* Lefkowitz discloses having STA 205 that performing a scan and selecting the WAP with the greatest signal strength (column 6 line 22-27).

With regard to claim 33, Lefkowitz teaches the mobile station recited in claim 28. *further comprising a reassociation message process unit which establishes a reassociation with the new access point.* Lefkowitz discloses having STA 205 generating and processing a "REASSOCIATE" ("reassociation") messages (column 6 line 27-39).

With regard to claim 34, Lefkowitz teaches the mobile station recited in claim 33. *Further comprising a reassociation message process unit which outputs a reassociation message including information on the present access point,* Lefkowitz disclose STA 205 sending a "REASSOCIATE" message (column 6 line 27-29). However, Lefkowitz does not discloses having a reassociation message including information on the present access point

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and receives a reassociation response message from the new access point in response to a temporary connection being established between the new access point and the present access point. Lefkowitz disclose having STA 205 receiving a "REASSOCIATE-RESPONSE" WAP#2 215 ("new access point", column 6 line 34-39)...the "REASSOCIATE-REQUEST" that the STA 205 sent to WAP#2 215 allowed STA 205 to establish a communication link with it and that WAP#2 will distribute context information to the DS (distribution system) for STA 205 (column 6 line 29-34).

With regard to claim 40, Lefkowitz discloses a *computer readable medium encoded with operating instructions for implementing a handoff method for a mobile station in a wireless local area network, performed by a computer,* Lefkowitz discloses having wireless communication network 100 with a wireless communication device ("computer readable medium encoded with operating instructions") performing a fast handoff (title). It is known in the art that a wireless communication device has the same functionality as computer readable medium encoded with operating instructions.

the method comprising: selecting a new access point; Lefkowitz discloses that STA 205 begins a process of handoff from its current WAP to another access point and selecting the WAP with the greatest signal strength (column 6 line 22-25).

outputting a reassociation message to the new access point; Lefkowitz discloses the STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the selected WAP#2 215 (column 6 line 28-29).

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and receiving a reassociation response message from the new access point in response to a temporary connection being established between the new access point and a previous access point of the mobile station. Lefkowitz discloses STA 205 receives "REASSOCIATE-RESPONSE" packet 245 from WAP#2 215 (column 6 line 38-40).

Lefkowitz further discloses in the beginning of the handoff process STA 205 must initiate a termination of the communication link (column 5 line 52-54) and once STA 205 locate another WAP (wireless access point) the remaining connection is severed completely (column 6 line 42-46).

With regard to claim 43, Lefkowitz discloses having a *computer readable medium encoded with operating instructions for implementing a handoff method for an access point a mobile station in a wireless local area network, performed by a computer,* Lefkowitz discloses having a fast handoff method within a wireless communications network 100 (fig.1 and column 11 line 52).

the method comprising: establishing a temporary connection with a previous access point of the mobile station in response to receiving a reassociation message; Lefkowitz discloses that STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the WAP#2 215... the "REASSOCIATE-REQUEST" packet 240 is specifically addressed to WAP#2 215 that effectively request that WAP #2 215 allow the STA 205 to establish a communication link with it (column 6 line 27-40). It is inferred that the connection that STA 205 currently has is temporary connection before a handoff to a WAP with sufficient strength.

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outputting a reassociation response message corresponding to the reassociation message to the mobile station in response to establishing the temporary connection;

Lefowitz discloses the WAP#2 responds with a "REASSOCIATE-REQUEST" packet 245 that provides an answer to the "REASSOCIATE-REQUEST" packet 240 (column 6 line 34-36).

establishing an optimum connection with the mobile station; Lefowitz discloses that WAP #2 215 allow the STA 205 to establish a communication link ("optimum connection") with it (column 6 line 27-40).

and terminating the temporary connection with the previous access point in response to establishing the optimum connection. Lefowitz discloses that STA 205 transmit a "DIASSOCIATE" packet 255 to the WAP#1 210. The "DIASSOCIATE" packet 255 completely severs any remaining connection the STA 205 had remaining with the WAP#1 210 (column 6 line 42-46).

With regard to claim 44, Lefkowitz discloses having a *method in a computer system for implementing a handoff of a mobile station in a wireless local area network,* Lefkowitz discloses having a fast handoff method within a wireless communications network 100 (fig.1 and column 11 line 52).

the method comprising: controlling a channel information collection unit to collect channel information on access points in an extended service set in response to receiving a handoff alert message from the mobile station; Lefkowitz discloses WAP#1

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detects low signal levels within a effective coverage area (e.g. Extended Service Set column 5 line 38-45).

and controlling a handoff alert message process unit to output a response message corresponding to the handoff alert message to the mobile station, the channel information being included in the response message. Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50).

With regard to claim 45, Lefkowitz discloses having a *method in a computer system for implementing a handoff of a mobile station in a wireless local area network, the method comprising: controlling a temporary connection/termination process unit to establish a temporary connection with a previous access point of the mobile station in response to receiving a reassociation message from the mobile station;* Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 have the capability to process temporary connections and also terminate connections (column 5 line 52-67 and column 6 line 30-50).

and controlling a reassociation message process unit to output a response message corresponding to the reassociation message to the mobile station in response to establishing the temporary connection. Lefkowitz discloses STA 205 transmit a "REASSOCIATE-REQUEST" packet 240 to the WAP#2 215... the "REASSOCIATE-REQUEST" packet 240 is a specifically addressed to WAP#2 215 that effectively request that WAP #2 215 allow the STA 205 to establish a communication link with it

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(column 6 line 27-40)...the WAP#2 215 responds with a "REASSOCIATE-RESPONSE" packet 245 to STA 205 (column 6 line 34-36). It is inferred that the WAP ("access point") has the capability to process "REASSOCIATE-REQUEST" packet 240 and respond by sending a "REASSOCIATE-RESPONSE" packet 245.

With regard to claim 46, Lefkowitz teaches the method recited in claim 45. *further comprising: controlling an optimum connection search unit to establish an optimum connection with the mobile station;* Lefkowitz discloses that WAP#1 210 is able to detect low level signals on the outer limits of the effective coverage area as STA 205 approaches. It is inferred that the WAP have the ability to detect signals that are weak or strong.

and controlling the temporary connection/termination process unit to terminate the temporary connection with the previous access point in response to establishing the optimum connection. . Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50).

With regard to claim 48, Lefkowitz discloses having a *method in a computer system for implementing a handoff of a mobile station in a wireless local area network, the method comprising: controlling a handoff alert message process unit to obtain channel information on access points in an extended service set from a present access point;* Lefkowitz discloses having a WAP#1 210 transmitting a message ("handoff alert message") to the STA 205 to let it know that it is starting to move out of the effective

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coverage area of the WAP#1 210 and that it should start to look for an alternate wireless access point (column 5 line 38-45). It is inferred that STA 205 processes message from the WAP#1 210 that let them know that the signal level is getting weaker and that it time to search for a stronger signal generated by another access point. *and controlling a scanning unit to scan for a new access point using the channel information.* Lefkowitz discloses that STA 205 may perform a scan for signals from other WAPs (wireless access points). It is inferred the STA 205 have the means to scan the channel for signals.

With regard to claim 49, Lefkowitz teaches the method recited in claim 48.

Further comprising controlling an access point selection unit to select an access point with a strongest signal as the new access point according to a scanning result of the scanning unit. Lefkowitz discloses having STA 205 that performing a scan and selecting the WAP with the greatest signal strength (column 6 line 22-27).

With regard to claim 50 Lefkowitz teaches the method recited in claim 48.

further comprising controlling a reassociation message process unit to establish a reassociation with the new access point. Lefkowitz discloses having STA 205 generating and processing a "REASSOCIATE" ("reassociation") messages (column 6 line 27-39).

With regard to claim 52, Lefkowitz discloses *an access point performing a handoff with respect to a mobile station in a wireless local area network*, Lefkowitz discloses having wireless communication network 100 with a WAPs (wireless access points) communicating to and from the STA (column 4 line 63-67 and column 5 line 1-5).

the access point comprising: means for collecting channel information on access points in an extended service set in response to a handoff alert signal; Lefkowitz discloses when the WAP#1 210 notices that the STA 205 is starting to approach the outer limits of its effective coverage area, most likely through detection of a lower signal level ("collecting channel information")... the begin of handoff is that STA 205 must initiate the termination of its existing communication link with the first WAP#1 210. This accomplished with STA 205 transmitting an "ASSOCIATE_REQUEST" packet 220 to WAP#1 (column 5 line 38-56).

and means for establishing a temporary connection with a previous access point of the mobile station in response to a reassociation signal. Lefkowitz further discloses that STA 205 must initiate the termination of its existing communication link with the first WAP#1 210. This accomplished with STA 205 transmitting an "ASSOCIATE_REQUEST" packet 220 to WAP#1 (column 5 line 38-56). It is inferred that the connection between the STA 205 and WAP#1 is temporary until STA 205 finds a WAP that is sufficient. In addition, Lefkowitz having a "REASSOCIATE-REQUEST" packet 240 after finding WAP#2 215 (column 6 line 28-50).

With regard to claim 53, Lefkowitz discloses a *mobile station for use in a wireless local area network*, Lefkowitz discloses having wireless communication network 100 with wireless communication devices referred to as stations or STA for short (column 4 line 34-67).

comprising: means for receiving channel information on access point in an extended service set from a present access point of the mobile station; Lefkowitz discloses that

STA 205 ("mobile station") scan and receives signal information ("channel information") from WAPs within ESS (extended service set, column 6 line 24-13-24)

means for scanning a new access point by using the channel information; Lefkowitz

discloses that STA 205 ("mobile station") scan and receives signal information

("channel information") from WAPs (column 6 line 24-25).

and means for establishing a reassociation with the new access point; lefkowitz further

discloses that the STA 205 sends a "REASSOCIATE_REQUEST" packet 240 to the

WAP#2 215 (column 6 line 28-29).

10. Claim 38 is rejected under 35 U.S.C. 102(e) as being anticipated by Sinivaara et al. (PG PUB 2004/0202141).

With regard to claim 38, Sinivaara et al. disclose having a *computer readable medium encoded with operating instructions for implementing a handoff method for a mobile station in a wireless local area network, performed by a computer*, Sinivaara et al. having a mobile terminal (e.g. laptop computer) selecting a new access point (fig. 1 and page 4 paragraph 58 line 1-3)

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the method comprising: receiving channel information on access points in an extended service set from a present access point of the mobile station; Sinivaara et al. collection means for collecting service reports from available access points, each service report describing current service conditions within a service area of a particular access point (page 7 paragraph 16 line 1-20) .It is inferred that the service reports contain information on the link of the another access points.

and scanning channels by using the channel information to select a new access point of the mobile station. Sinivaara et al. discloses having a transceiver for communicating with an access point of the wireless communication system via wireless link...the terminal examines the access points indicated by RSSI value until an acceptable access point is found (page 5 paragraph 83 line 28-38).

11. Claim 51 and 54-60 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhong (PG PUB 2006/0153133).

With regard to claim 51, Zhong discloses having a *computer readable medium containing a data structure for storing channel information on access points in an extended service set, the channel information provided to a mobile station to select a new access point during a handoff in a wireless local area network, Zong discloses having a system and method for performing a fast handoff in a wireless local area network using nearest-neighbor tables ("data structure", title and abstract)*

the data structure comprising: address information on each of the on respective access points in the extended service set; Zhong discloses having a nearest-neighbor tables

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("data structure", title and abstract) that comprised the records of with a field that identify a nearest neighbor AP ("access point", page 1 paragraph 9 line 1-15). It is inferred that the identity of the can be an address of the AP ("access point").

information on a channels used by each of the respective access points in the extended service set; Zhong discloses having a nearest-neighbor tables ("data structure", title and abstract) that comprised the records of a plurality of APs (access points) associated with STA (stations)...the record contains a field that has the channel of operation information (page 1 paragraph 9 line 1-15).

and information on one or more access points adjacent to each of the respective access points in the extended service set. Zhong discloses having a nearest-neighbor tables ("data structure", title and abstract) that comprised the records of a plurality of APs (access points) associated with STA (stations). Zhong further discloses the record contain a field that identify said nearest neighbor AP (page 1 paragraph 9 line 1-15).

With regard to claim 54, Zhong discloses *an access point for use with respect to a mobile station in a wireless area network,* Zong discloses having a wireless network 100 (wireless local area network) with APs 14-16 (access points) communicating with one or more mobile stations (STAs) 20-23 by wireless link (page 2 paragraph 28 line 2-14).

the access point comprising: a receiving unit which receives information on a neighboring access point from the neighboring access point adjacent to the access point; and a storing unit which stores the information on the neighboring access point.

Zong discloses that during handoffs that the Aps have the opportunity to "learn" about the existence and channel of operation of their nearest-neighbor Aps in the network and populate their nearest-neighbor tables as they learn (page 4 paragraph 54 line 1-9).

With regard to claim 55, Zong teaches the access point recited in claim 54.
wherein the information comprises a basic service set identification (BSSID) representing a BSS identifier, an access point address of the neighboring access point, information on a channel used by the neighboring access point, and information on access points adjacent to the neighboring access point. Zhong discloses in fig. 6A and 6B the formats of a re-association frame.

With regard to claim 56, Zhong teaches the access point recited in claim 54.
wherein the information on the neighboring access point is provided in a table format. Zhong discloses having a nearest-neighbor tables (page 4 paragraph 54 line 9)

With regard to claim 57, Zhong teaches the access point recited in claim 54.
Wherein the receiving unit extracts necessary information from a signal received from the neighboring access point, and based on the extracted information, the storing unit updates the information on the neighboring access point.

With regard to claim 58, Zhong discloses a *method for an access point for use with respect to a mobile station in a wireless local area network*, Zhong discloses having a wireless network 100 (wireless local area network) with APs 14-16 (access points)

communicating with one or more mobile stations (STAs) 20-23 by wireless link (page 2 paragraph 28 line 2-14).

the method comprising: receiving information on a neighboring access point from the neighboring access point adjacent to the access point and storing the information on the neighboring access point; Zhong discloses that during handoffs that the Aps have the opportunity to "learn" about the existence and channel of operation of their nearest-neighbor Aps in the network and populate their nearest-neighbor tables as they learn (page 4 paragraph 54 line 1-9).

With regard to claim 59, Zhong teaches the method recited in claim 58.

Wherein the information comprises a basic service set identification (BSSID) representing a BSS identifier, an access point address of the neighboring access point, information on a channel used by the neighboring access point, and information on access points adjacent to the neighboring access point. Zhong discloses in fig. 6A and 6B the formats of a re-association frame.

With regard to claim 60, Zhong teaches the method recited in claim 58.

Further comprising extracting necessary information from a signal received from the neighboring access point and updating the information on the neighboring access point based on the extracted information.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. **Claim 3 and 4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 1 above, and further in view of Rom (US Patent 6,360,264).

With regard to claim 3, Lefkowitz teaches the method recited in claim 1.

Further comprising outputting a handoff alert message to the present access point, wherein the receiving of the channel information comprises receiving a response message corresponding to the handoff alert message, the response message including

the channel information. Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52). Lefkowitz further disclose at the beginning of a handoff STA 205 transmit an "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to WAP#1 210 ("present access point", column 5 line 52-55). Lefkowitz discloses STA 205 receives a response "ASSOCIATE-RESPONSE" packet 225 from WAP#1 210. However, Lefkowitz does not disclose having the response message including the channel information. Rom discloses having a method that is maintaining connectivity of nodes in a wireless local area network (title). Rom further discloses having a node receiving a response from a new access point the response packet includes operating parameters such as frequency of the channel (column 5 line 27-33).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a fast handoff method as taught by Lefkowitz transmitting channel frequency information in a response packet as taught by Rom to advantageously provide method to evaluate channel conditions.

With regard to claim 4, in combination Lefkowitz and Rom teaches the method recited in claim 3. *Wherein the outputting of the handoff alert message comprises outputting the handoff alert message in response to receiving a weak signal from the present access point.* Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52). Lefkowitz further disclose at the beginning of a handoff STA 205 transmit an "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to WAP#1 210 ("present access point")...WAP#1 210

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notices that STA 205 is starting to approach the outer limits of its effective area, most likely through the detection of a lower signal level or increased error rates (column 5 line 38-45).

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 5 above, and further in view of Rom (US Patent 6,360,264).

With regard to claim 6, Lefkowitz teaches the handoff method recited in claim 5. *wherein the selecting of the new access point*; Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52). *comprises: outputting a handoff alert message to the previous access point*; Lefkowitz further disclose at the beginning of a handoff STA 205 transmit an "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to WAP#1 210 ("present access point", column 5 line 52-55).

receiving a response message from the previous access point, the response message including channel information on access points in an extended service set; Lefkowitz discloses STA 205 receives a response "ASSOCIATE-RESPONSE" packet 225 from WAP#1 210. Rom discloses having a method that is maintaining connectivity of nodes in a wireless local area network (title). However, Lefkowitz does not disclose having the response message including the channel information. Rom further discloses having a

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node receiving a response from a new access point the response packet includes operating parameters such as frequency of the channel (column 5 line 27-33).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a fast handoff method as taught by Lefkowitz transmitting channel frequency information in a response packet as taught by Rom to advantageously provide method to evaluate channel conditions.

scanning channels by using the channel information included in the response message; and selecting an access point with a strongest signal as the new access point. Lefkowitz discloses having a STA 205 may perform a scan a signal from other WAP (wireless access points) of sufficient strength, with STA 205 normally choosing the WAP with the greatest signal strength...(column 6 line 24-26).

16. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rom (US Patent 6,360,264) as applied to claim 7 above and in further view of Lefkowitz (US Patent 6,990,343).

With regard to claim 8, Rom teaches the method recited in claim 7.

wherein the collecting of the channel information comprises:

broadcasting handoff notification messages to the access points in the extended service set; Rom discloses having the typical wireless LAN and that the nodes 10 are organized into geographical regions called "basic service areas"(BSAs) or cells 11 . It is known in

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the art that extended service set (ESS) comprises a number of basic service sets (BSS). Also, Rom discloses having a node (mobile terminal") receiving a response packet from a access point with it operating parameters such as the frequency of the channel (column 5 line 28-31).

However, Rom does not explicit discloses broadcasting handoff notification messages to the access points in the extended service set. Lefkowitz discloses having a STA 305 transmit a "PROBE REQUEST" message 330 (" handoff notification messages") to one or more access points in WAPS 315 (wireless access points)... STA 35 may transmit multiple "PROBE REQUEST" message 330 to as many different wireless access points as it is able to detect...the "PROBE REQUEST" message 330 is a essential request from STA 305 to the addressed wireless access point to serve as the access point for STA 305 (column 8 line 25-43).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a having a node receiving information about the frequency of the channel corresponding to the access point as taught by Rom within a "PROBE REQUEST" message 330 as taught by Lefkowitz to provide a technique that will collect a channel information on new access points.

and receiving acknowledgement messages including the channel information from the access points in the extended service set. Rom discloses receiving a response packet from a selected access point the packet include the operating parameters such as the

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frequency of the channel on which the selected access point communicates with nodes (column 5 line 28-33).

With regard to claim 9, Rom teaches the method recited in claim 7.

further comprising outputting an acknowledgement message including personal channel information in response to receiving a handoff notification message from a present access point of the mobile station. Rom discloses having a node ("mobile station") outputting instructions to the current access point instructing it to relay a message to the selected access point, requesting that the selected access point accept the handoff of the node (column 5 line 18-27). However, Rom does not explicitly disclose outputting an acknowledgement message including personal channel information in response to receiving a handoff notification message from a present access point of the mobile station. Lekfowitz discloses that STA 205 sends an "ACKNOWLEDGMENT" packet 230 to WAP#1 ("present access point")... this "ACKNOWLEDGMENT" packet 230 was sent after WAP#1 210 transmitted a message to STA 205 to inform it to start looking for an alternate wireless access point (column 5 line 41-45). It is inferred that the personal channel information is included such as the source of where the packet came from (e.g. channel frequency).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a having a node ("mobile station") as taught by Rom sending "ACKNOWLEDGMENT" packet 230 to WAP#1 ("present access point") as

taught by Lefkowitz to maintain the connectivity among the current access point and the STA ("mobile station").

With regard to claim 10, Rom teaches the method recited in claim 7.

further comprising: stopping services to the mobile station in response to a temporary connection being established with a new access point of the mobile station; Rom discloses having a node ("mobile station"). However, Rom does not explicitly disclose stopping services to the mobile station in response to a temporary connection being established with a new access point of the mobile station; Lefkowitz discloses that WAP#1 notifies a distribution system (DS) of the impending movement of the STA 205 to a different WAP through a packet 203... the net effect of notifying the DS is that will expect another notification from a different WAP (wireless access point") of the new context information will be used to route packets to and from the STA 205 (column 6 line 11-21). It is inferred that the WAP#1 will initiate the change in the routing of the packets for STA 205 by notify the DS of the handoff.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a having a node ("mobile station") as taught by Rom terminate its connection with a WAP#1 as taught by Lefkowitz to prevent delay of packet transmission during a handoff.

Rom does not disclose outputting service data to the new access point through the temporary connection. Lefkowitz discloses having a WAP#2 215 allowing STA 205 to establish a communication link with it and that WAP#2 215 will distribute context

information to the DS for STA 205 (column 6 line 31-34). Also, Lefkowitz further discloses STA 205 sending and receiving service packets from WAP#2 215 ("new access point", column 6 line 27-40).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a having a node ("mobile station") as taught by Rom with a WAP#2 215 establishing a communication link to receive service packets as taught by Lefkowitz to maintain connectivity within the network during a handoff.

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) in view of Rom (US Patent 6,360,264).

With regard to claim 17, Lefkowitz discloses having an *access point performing a handoff with respect to a mobile station in a wireless local area network*, Lefkowitz discloses having a wireless communication network 100 ("wireless local area network") with several wireless access points (WAP, "access points") performing a fast handoff (column 4 line 34-36).

the access point comprising: a handoff alert message process unit which receives a handoff alert message and outputs a response message corresponding to the handoff alert message to the mobile station; Lefkowitz discloses that the WAP #1 receiving a "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") from STA 205 and respond by transmitting a "ASSOCIATE-RESPONSE" packet 225 to STA 205 (column

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5 line 53-63). It is inferred the WAP have the capability to process "ASSOCIATE-REQUEST" packet 220 ("handoff alert message").

a channel information collection unit which collects channel information on access points in an extended service set, Lefkowitz discloses that the WAP#1 210 detects a lower signal levels within the outer limits of its effective coverage area (column 5 line 38-41). It is inferred that the WAP#1 215 collects channel information within its coverage area.

Lefkowitz does not disclose *the channel information is included in the response message*. Rom further discloses having a node receiving a response from a new access point the response packet includes operating parameters such as frequency of the channel (column 5 line 27-33).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a fast handoff method as taught by Lefkowitz transmitting channel frequency information in a response packet as taught by Rom to advantageously provide method to evaluate channel conditions.

1. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 17 above, and further in view of Rudolf et al. (PG PUB 2005/0053043).

With regard to claim 19, in combination Lefkowitz and Rom teaches the access point recited in claim 17. *wherein the channel information collection unit*; Lefkowitz discloses that the WAP#1 210 detects a lower signal levels within the outer limits of its effective coverage area (column 5 line 38-41). It is inferred that the WAP#1 215 collects channel information within its coverage area.

comprises: a handoff notification message send unit which outputs a handoff notification message to collect the channel information on the access points in the extended service set; Lefkowitz teaches WAP#1 210 transmit a message ("handoff notification message") to STA 205 to let it know that it is moving out of the coverage area and that it should start looking for an alternate wireless access point (column 5 line 41-45)... WAP#1 210 detects a lower signal levels within the outer limits of its effective coverage area (column 5 line 38-41). It is inferred that the WAP#1 215 collects channel information within its coverage area.

and a handoff notification acknowledgement message receiving unit which receives a handoff response message from the access points, the channel information on the access points being provided by way of the handoff response message. Lefkowitz does not disclose having receiving a handoff response message from the access points, the channel information on the access points being provided by way of the handoff response message. Rudolf discloses having access point receiving channel information on neighbors (i.e. access points)... the access point 304 may obtain information regarding access point 318 using and inter-access point signaling (page 2 paragraph 23 line 1-12).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a WAP#1 210 as taught by Lefkowitz receiving information on neighboring channel information as taught by Rudolf et al. to provide a technique that will specifically select the access point with quality channel attributes.

1. **Claim 27 and 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunkeler (US Patent 6,950,655) in view of Lefkowitz (US Patent 6,990,343).

With regard to claim 27, Hunkeler discloses having an *apparatus for use in an access point performing a handoff with respect to a mobile station in a wireless local area network*, Hunkeler discloses having a AP 302 ("access point") with a processor 312 ("apparatus") that is provided so that handover information which is appropriate for AP's 300 coverage area is accessed from memory 310 and broadcast to the WTRUs (wireless transmit/receive unit) 306,308 within that coverage area (column 7 line 15-18).

comprising: a channel information collection unit which collects channel information on access points in an extended service set in response to a handoff alert signal; Hunkeler discloses the AP (access point) includes handover information which is inferred that the information can be channel information on the surrounding Aps(access points, column 7 line 15-18).

Hunkeler does not explicitly disclose having a *temporary connection/termination process unit for establishing a temporary connection between predetermined access*

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points subject to the handoff operation, in response to a reassociation signal. Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 ("wireless access points") have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50)... Lefkowitz further discloses having a "REASSOCIATE_REQUEST" packet 240 being sent to a new WAP ("wireless access point", column 28-30).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have AP 302 ("access point") as taught by Hunkeler with a the ability to connect and terminate a connection in response to a "REASSOCIATE_REQUEST" packet 240 Lefkowitz to provide a seamless connection technique within an access point during a handoff.

With regard to claim 47, Hunkeler discloses having a *method in a computer system for implementing a handoff of a mobile station in a wireless local area network,* Hunkeler discloses having a AP 302 ("access point") with a processor 312 ("apparatus") that is provided so that handover information which is appropriate for AP's 300 coverage area is accessed from memory 310 and broadcast to the WTRUs (wireless transmit/receive unit) 306,308 within that coverage area (column 7 line 15-18).

the method comprising: controlling a channel information collection unit to collect channel information on access points in an extended service set in response to receiving a handoff alert message, from the mobile station; Hunkeler discloses the AP

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(access point) includes handover information which is inferred that the information can be channel information on the surrounding Aps(access points, column 7 line 15-18).

Hunkeler does not explicitly disclose having a *controlling a temporary connection/termination process unit to establish a temporary connection with a previous access point of the mobile station in response to receiving a reassociation message from the mobile station.* Lefkowitz discloses that the both WAP#1 210 and WAP#2 215 ("wireless access points") have the capability to process temporary connection and also terminate connection (column 5 line 52-67 and column 6 line 30-50)...Lefkowitz further discloses having a "REASSOCIATE_REQUEST" packet 240 being sent to a new WAP ("wireless access point", column 28-30).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have AP 302 ("access point") as taught by Hunkeler with a the ability to connect and terminate a connection in response to a "REASSOCIATE_REQUEST" packet 240 Lefkowitz to provide a seamless connection technique within an access point during a handoff.

17. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 28 above, and further in view of Sinivaara et al. (PG UB 2004/0202141)

With regard to claim 30, Lefkowitz teaches the mobile station recited in claim 28. *further comprising a distributed service unit which stores the channel information on the access points*. Lefkowitz discloses having STA 205 ("mobile station"). However, Lefkowitz does not disclose having a distributed service unit which stores the channel information on the access points. Sinivaara et al. discloses having a mobile terminal with a stores a set of attributes (e.g. MAC layer MIB) about access points (page 4 paragraph 72 line 1-8)... the contents of this database is utilized to provide the terminals (mobile terminals) with an intelligent mechanism for selecting an access point during joining or re-association process (i.e. handoff). It is inferred the set of attributes can be condition of the channel the AP is on.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have having STA 205 ("mobile station") as taught by Lefkowitz storing a set a set of attributes (e.g. MAC layer MIB) about access points as taught by Sinivaara et al. to provide a informative access point selection process.

18. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 28 above, and further in view of Rom (US Patent 6,360,264).

With regard to claim 31, Lefkowitz teaches the mobile station recited in claim 28. *wherein the handoff alert message process unit comprises:*
a handoff alert message send unit which outputs a handoff alert message to the present

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access point; Lefkowitz discloses having a wireless communication network 100 in fig. 1 with STAs ("mobile stations")...the STA 205 sending a "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to the WAP#1 210 ("present access point") to begin a handoff (column 5 line 52-56).

and a handoff alert acknowledgment message receiving unit which receives a response message corresponding to the handoff alert message, the channel information being included in the response message. Lefkowitz discloses having a STA 205 receiving a "ASSOCIATE-REQUEST" packet 220 from WAP#1 210 ("access point", column 6 line 5-10). It is inferred that STA 205 ("mobile station") have the capability to receiving a response from WAP#1 210 ("access point"). However, Lefkowitz does not having channel information being included in the response message. Rom discloses having a access point responding to with a packet with its operating parameters such as the frequency of the channel (column 5 line 28-34).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a STAs ("mobile stations") as taught by Lefkowitz receiving a response packet from a access point with its operating parameters such as the frequency of the channel as taught by Rom to advantageously provide method to evaluate channel conditions.

With regard to claim 32, in combination Lefkowitz and Rom teaches the mobile station recited in claim 31. *Further comprising a signal strength detection transmit which detects a signal strength of the access points, wherein the handoff alert message send*

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transmit outputs the handoff alert message in response to a predetermined signal strength of the present access point. Lefkowitz disclose having STA 205 scanning to find the WAP with the greatest signal strength and sending a "REASSOCIATE-REQUEST" ("handoff alert message") to that particular WAP (Wireless access point", column 6 line 24-40).

19. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) in view of Rom (US Patent 6,360,264) and Sinivaara et al. (PG PUB 2004/0202141).

With regard to claim 35, Lefkowitz discloses having a *mobile station*; Lefkowitz discloses having a wireless communication network 100 in fig. 1 with STAs ("mobile stations").

comprising: a handoff alert message process unit which receives channel information on access points in an extended service set from a present access point; Lefkowitz discloses having a wireless communication network 100 in fig. 1 with STAs ("mobile stations")...the STA 205 sending a "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to the WAP#1 210 ("present access point") to begin a handoff (column 5 line 52-56). However, Lefkowitz does not having channel information being included in the response message. Rom discloses having an access point responding to with a packet with its operating parameters such as the frequency of the channel (column 5 line 28-34).

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Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a STAs ("mobile stations") as taught by Lefkowitz receiving a response packet from a access point with its operating parameters such as the frequency of the channel as taught by Rom to advantageously provide method to evaluate channel conditions.

a scanning unit which scans for a new access point by using the channel information; Lefkowitz discloses that STA 205 may perform a scan for signals from other WAPs (wireless access points). It is inferred the STA 205 have the means to scan the channel for signals.

an access point selection unit which selects an access point with a strongest signal as the new access point according to a scanning result of the scanning unit; Lefkowitz discloses having STA 205 that performing a scan and selecting the WAP with the greatest signal strength (column 6 line 22-27).

Lefkowitz *a distributed service unit which stores the channel information on the access points;* Sinivaara et al. discloses having a mobile terminal with a stores a set of attributes (e.g. MAC layer MIB) about access points (page 4 paragraph 72 line 1-8)... the contents of this database is utilized to provide the terminals (mobile terminals) with an intelligent mechanism for selecting an access point during joining or re-association process (i.e. handoff).It is inferred the set of attributes can be condition of the channel the AP is on.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have having STA 205 ("mobile station") as taught by Lefkowitz storing a set a set of attributes (e.g. MAC layer MIB) about access points as taught by Sinivaara et al. to provide a informative access point selection process.

a signal strength detection unit which detects a signal strength of the access points; Lefkowitz disclose having STA 205 scanning to find the WAP with the greatest signal strength and sending a "REASSOCIATE-REQUEST" ("handoff alert message") to that particular WAP (Wireless access point", column 6 line 24-40).

and a reassociation message process unit which establishes a reassociation with the new access point; Lefkowitz disclose STA 205 sending a "REASSOCIATE" message (column 6 line 27-29). However, Lefkowitz does not discloses having a reassociation message including information on the present access point

20. Claim 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) in view of Rom (US Patent 6,360,264).

With regard to claim 36, Lefkowitz discloses having a *an apparatus for use in a mobile station in a wireless local area network,*
comprising: a handoff alert message send unit which outputs a handoff alert message to a present access point of the mobile station to collect channel information on access points in an extended service set; Lefkowitz discloses having a wireless communication

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network 100 in fig. 1 with STAs ("mobile stations")...the STA 205 sending a "ASSOCIATE-REQUEST" packet 220 ("handoff alert message") to the WAP#1 210 ("present access point") to begin a handoff (column 5 line 52-56). In addition, Lefkowitz discloses STA 205 transmit a "ACKNOWLEDGMENT" packet 230 to WAP#1 to begin looking for a new WAP and that search includes scanning for WAPs with the greatest signal strength. (column 6 line 22-27).

and a handoff alert acknowledgment message receiving unit which receives a response message corresponding to the handoff alert message, the channel information being included in the response message; Lefkowitz discloses having a STA 205 receiving a "ASSOCIATE-REQUEST" packet 220 from WAP#1 210 ("access point", column 6 line 5-10). It is inferred that STA 205 ("mobile station") have the capability to receiving a response from WAP#1 210 ("access point"). However, Lefkowitz does not having channel information being included in the response message. Rom discloses having a access point responding to with a packet with its operating parameters such as the frequency of the channel (column 5 line 28-34).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a STAs ("mobile stations") as taught by Lefkowitz receiving a response packet from a access point with its operating parameters such as the frequency of the channel as taught by Rom to advantageously provide method to evaluate channel conditions.

With regard to claim 37, in combination Lefkowitz and Rom teaches the apparatus recited in claim 36. *further comprising a scanning unit which scans for a new access point using the channel information.* Lefkowitz discloses that STA 205 may perform a scan for signals from other WAPs (wireless access points). It is inferred the STA 205 have the means to scan the channel for signals.

21. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinivaara et al. (PG PUB 2004/0202141) in view of Rom (US Patent 6,360,264).

With regard to claim 39, Sinivaara et al. teaches the computer readable medium in claim 38. *further comprising outputting a handoff alert message to the present access point*, Sinivaara et al. disclose having a MT (mobile terminal e.g. portable computer, fig. 1). However, Sinivaara et al. does not explicitly discloses outputting a handoff alert message to the present access point, Rom discloses the node communicate an instruction ("handoff alert message") to the current access point("present access point"), instructing it to relay a message to the selected access point (column 5 line 18-20).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have having a MT (mobile terminal e.g. portable computer, fig. 1) as taught by Sinivaara et al. which is communicating instructions ("handoff alert message") to the current access point as taught by Rom to provide technique of that will alert the current access point of the beginning of a handoff.

Sinivaara et al does not disclose *wherein the receiving of the channel information comprises receiving a response message corresponding to the handoff alert message, the response message including the channel information.* Rom discloses that the access point responds automatically to the node's request by sending a packet operating parameters such as the frequency of the channel (column 5 line 28-32). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have MT (mobile terminal e.g. portable computer, fig. 1) as taught by Sinivaara et al. receiving a response with operating parameters such as the frequency of the channel as taught by Rom to advantageously evaluate the channels of the potential new access points.

22. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefkowitz (US Patent 6,990,343) as applied to claim 40 above, and further in view of Rom (US Patent 6,360,264).

With regard to claim 41, Lefkowitz teaches the computer readable medium as recited in claim 40. *wherein the selecting of the new access point;*

Lefkowitz discloses having a wireless communication network 100 with a fast handoff method (fig 1 and 2, column 11 line 52).

outputting a handoff alert message to the previous access point; Lefkowitz further disclose at the beginning of a handoff STA 205 transmit an "ASSOCIATE-REQUEST"

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packet 220 ("handoff alert message") to WAP#1 210 ("present access point", column 5 line 52-55).

receiving a response message from the previous access point, the response message including channel information on access points in an extended service set; Lefkowitz discloses STA 205 receives a response "ASSOCIATE-RESPONSE" packet 225 from WAP#1 210. Rom discloses having a method that is maintaining connectivity of nodes in a wireless local area network (title). However, Lefkowitz does not disclose having the response message including the channel information. Rom further discloses having a node receiving a response from a new access point the response packet includes operating parameters such as frequency of the channel (column 5 line 27-33).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made to have a fast handoff method as taught by Lefkowitz transmitting channel frequency information in a response packet as taught by Rom to advantageously provide method to evaluate channel conditions.

scanning channels by using the channel information included in the response message; and selecting an access point with a strongest signal as the new access point. Lefkowitz discloses having a STA 205 may perform a scan a signal from other WAP (wireless access points) of sufficient strength, with STA 205 normally choosing the WAP with the greatest signal strength...(column 6 line 24-26).

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to DeWanda Samuel whose telephone number is (571) 270-1213. The examiner can normally be reached on Monday- Thursday 8:30-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DeWanda Samuel
6/10/2007


RICKY Q. NGO
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